Patent claims

1. A high frequency filter of coaxial construction, comprising one or more resonators (R) having the following features:

- an electrically conductive internal conductor configured as an internal conductive tube (1);
- an electrically conductive external conductor (2);
- an electrically conductive base (3) which electrically interconnects the internal conductor and the external conductor (2);
- a cover (5) covering the high frequency filter with respect to the base (3) and having an inner side (5a) and outer side (5b), the inner side (5a) pointing toward a free end (1a) of the internal conductive tube (1a);

wherein

- a dielectric layer (6) having a relative dielectric constant greater than 2 is arranged between the outer side (5b) of the cover (5) and the free end (1a) of the internal conductive tube (1); and
- the radial extent of the dielectric layer (6) substantially covers the cross section of the internal conductive tube (1) at the free end (1a) thereof.

2. The high frequency filter as claimed in Claim 1, wherein the relative dielectric constant of the dielectric layer (6) is ≥ 5, preferably ≥ 8, particularly preferably ≥ 9.

3. The high frequency filter as claimed in Claim 2, wherein the relative dielectric constant of the dielectric layer is ≥ 40, preferably between 40 and 80, particularly preferably between 60 and 80.

4. The high frequency filter as claimed in any one of the preceding claims, wherein the dielectric layer (6) comprises ceramic material, in particular aluminum oxide ceramic.

5. The high frequency filter as claimed in any one of the preceding claims, wherein the surface area of the radial extent of the dielectric layer (6) is at least twice the surface area of the cross section of the internal conductive tube (1) at the free end (1a) thereof.

6. The high frequency filter as claimed in any one of the preceding claims, wherein the cross section of the internal conductive tube (1) is substantially circular at the free end (1a) thereof.

7. The high frequency filter as claimed in any one of the preceding claims, wherein the radial extent of the dielectric layer (6) is substantially circular.

8. The high frequency filter as claimed in Claim 7, if dependent on Claim 6, wherein the diameter (d1) of the radial extent of the dielectric layer (6) corresponds at least to the diameter (d2) of the cross section of the internal conductive tube (1) at the free end (1a) thereof.

9. The high frequency filter as claimed in Claim 8, wherein the diameter (d1) of the radial extent of the dielectric layer (6) is at least 1.5 times the diameter (d2) of the cross section of the internal conductive tube (1) at the free end thereof.

10. The high frequency filter as claimed in any one of Claims 7 to 9, wherein the external conductor (2) is an external conductive tube having a substantially circular cross section

and the diameter (d3) of the external conductive tube is at least twice the diameter of the radial extent of the dielectric layer (6).

11. The high frequency filter as claimed in any one of the preceding claims, wherein the dielectric layer (6) is arranged on the cover (5), in particular is fastened to the cover.

12. The high frequency filter as claimed in Claim 11, wherein the dielectric layer (6) is inserted in a recess in the inner side (5a) of the cover (5).

13. The high frequency filter as claimed in Claim 12, wherein the dielectric layer (6) is held in the recess by an interlocking fit, in particular by an edge (5'), projecting beyond the edge of the dielectric layer (6), on the inner side (5a) of the cover (5).

14. The high frequency filter as claimed in any one of the preceding claims, wherein the dielectric layer (6) is held on the inner side (5a) of the cover (5) by an adhesion means, in particular adhesive.

15. The high frequency filter as claimed in either Claim 12 or Claim 14, wherein the dielectric layer (6) is closed by the inner side (5a) of the cover (5).

16. The high frequency filter as claimed in any one of the preceding claims, wherein the high frequency filter comprises a plurality of resonators (R), a single continuous, at least partially strip-like dielectric layer being provided for all of the resonators (R).

17. The high frequency filter as claimed in any one of the preceding claims, wherein the resonators (R) are configured and coupled in such a way that a duplex switch is formed.

18. The high frequency filter as claimed in any one of Claims 1 to 16, wherein the resonators (R) are configured and coupled in such a way that a band-pass filter or a band-stop filter is formed.